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ON SOME SPHAEROCERIDAE (DIPTERA) FROM THE ISLAND OF GUAM

By O. W. Richards, M.A., D.Sc., F.R.E.S.

The flies described below were collected by Lt.-Cmdr. G. E. Bohart, U.S. Navy, at Guam, Pago, 27.x.1945. Very little is known of the Sphaeroceridae of the Pacific region and three of the species seem to be new. The fourth, *L. atoma* (Rondani), is a European species, previously known from W. Europe and the island of Madeira; many other species, however, have proved to be cosmopolitan. The holotypes will be deposited in the U.S. National Museum, Washington, D.C.; some of the paratypes in the British Museum (Natural History).

Leptocera (Limosina) femorina sp. n.

Male. Black; probably antennae, anterior quarter of front, pleura, and legs reddish-brown (as far as can be judged from alcoholic specimens). Halteres white with a darker stalk. Wings hyaline. L. 1·5 mm. Arista long, four times as long as antennae, pubescence moderately long. Three pairs of interfrontal bristles, none enlarged. One pair of dorso-central bristles, about seven rows of microchaetes on each side, one humeral bristle, four long scutellar bristles, scutellum about as long as broad, one small sterno-pleural. Wings as in the group of *L. luteilabris* (Rondani), R_{4+5} quite straight and not overpassed by costa, alula narrow, R_{2+3} rather gradually, bent on to costa, with which it forms an acute angle, median cell rather broad, its lower outer corner angulated, second sector of costa about three-quarters as long as third. Fore legs normal, tarsi not broadened. Mid legs with trochanter bearing a short bristle, femur without special bristles, tibia with an anterodorsal bristle at $\frac{1}{3}$ (surmounted by a smaller one), a pair of bristles at $\frac{3}{4}$ (the anterior one somewhat the larger), surmounted by a moderate anterodorsal bristle at $\frac{2}{3}$, a long apical ventral and a small mid ventral, tarsus moderately long and stout, basitarsus about half as long as tibia, bearing beneath short but strong bristles, one of which near centre is sometimes a little longer than the others. Hind legs without special bristles except the femur, which has a postero-ventral row of 6–8 short stout bristles, one-third as long as width of femur, along proximal half. Abdomen normal, genitalia rather large, on each side of anus a long bristle directed obliquely upwards, forceps in the form of very small black hooks, posterior margin of last sternite with a central blackened lobe which projects as a narrow arc.

Female. Similar but no row of bristles on hind femur. Each cercus bears one long and two short straight bristles.

Type ♂, allotype ♀, paratypes 10 ♂, 2 ♀.

Of the most similar species, none has the row of bristles on the male hind femur. *L. rufilabris* (Stenhammar) has the knob of the halteres black and the mid basitarsus somewhat thinner. *L. luteilabris* (Rondani) has the face dark in the female. *L. penetralis* (Collin) has the mid basitarsus much longer and thinner. *L. mediospinosa* (Duda) has a bristle near the centre of the mid tibia.

Leptocera (Limosina) collinella sp. n.

Female. Black; halteres pale. Wings hyaline. L. 1·3 mm. Arista about three times as long as antenna, with long pubescence. Head bristles normal, three pairs of small

interfrontals, none enlarged. One pair of dorso-centrals, microchaetes on mesonotum dense as usual, one humeral bristle, scutellum rather longer than broad, with four long bristles, one sternopleural. Wings with first sector of costa with rather strong bristles (as in subgen. *Leptocera* Olivier, etc.), rest of costa with rather distinct pubescence, second sector distinctly thickened, half as long again as third; R_{2+3} first somewhat anteriorly convex, then straight, then slightly bent on to the costa, with which it forms a very acute angle; R_{4+5} from about its centre strongly and regularly bent on to the costa by which it is overpassed for a distance equal to nearly half the length of third costal sector; both branches of *M* slightly produced beyond *im*, distance between *im* and *rm* equal to or somewhat shorter than that between *rm* and the origin of R_5; alula small and narrow. Fore legs normal, tarsi not broadened. Mid legs with no long bristle on trochanter, femur without special bristles, tibia with a large bristle at $\frac{1}{3}$ surmounted by a small pair, a large dorsal bristle at $\frac{3}{4}$ with a large posterodorsal a little above it and two small more anterior bristles a little higher still, a long mid ventral and a longer apical ventral bristle; tarsus one-third longer than tibia, basitarsus less than half as long as tibia, not much longer than second segment, rather stout, with short bristles beneath, but no long one. Hind tibia with a dorsal bristle at $\frac{3}{4}$ a little longer than diameter of tibia. Abdomen normal, cerci ending in two rather short, somewhat sinuous, tapering bristles.

Male. Somewhat smaller than female and bristles, including those on first costal sector, weaker. Genitalia rather large, with no long bristles but with a transverse row of about four short bristles just ventral to anus.

Type and paratype ♀, allotype and two paratype ♂.

In Duda's key (1925 : 153), this species runs to couplet 77, but it differs from the species included there in the considerably thickened second costal sector, the very acute angle made by R_{2+3} with the costa, and the development of bristles along the first costal segment, especially in the female.

Leptocera (Poecilosomella) conica sp. n.

Male. Black; head (excluding eyes and perhaps ocellar triangle), including antennae, yellow-brown. Thorax with mesonotum probably reddish-tinged, especially at sides, pleuron with yellowish stripes at dorsal margin and along the top of the sternopleuron. Legs brown, hind tibia with the knee whitish and with two darker rings, hind tarsi yellow (specimen in alcohol, so the colours may appear different in pinned specimens). Wings brown, with a rather indefinite hyaline fascia at the level of end of R_3 (composed of three more or less joined spots, the central one farther from base of wing), and second less marked more distal fascia formed by two spots above and below the end of R_5; base of wing also indefinitely paler. Halteres whitish. L. 1·5 mm.

Arista long, two and a half times as long as antenna with long pubescence. Third antennal segment subtriangular, produced at its upper distal corner into a short style-like process (one-sixth as long as dorsal margin of segment), arista inserted on outer edge of segment well before the process (not on it as in subgenus *Anommonia* Schmitz, etc.). Three pairs of small interfrontal bristles, other head bristles normal. Two pairs of strong dorso-centrals, the anterior pair just in front of suture, eight rows of microchaetes between them; two pairs of long scutellars, scutellum a little longer than broad; one long sternopleural. Mid femur with a dense tuft of black bristles, otherwise only with short bristles. Mid tibia with a pair of dorsal bristles at $\frac{1}{4}$ (the posterior one the larger), a pair at $\frac{3}{4}$ surmounted anterodorsally by a smaller one; no mid ventral bristle, apically with one short ventral bristle surrounded by some smaller ones; tibia somewhat incurved. Mid tarsus considerably longer than tibia, basitarsus rather more than half as long, ventrally with short bristles and one slightly longer one near base. Hind tibia with a long bristle (twice as long as width of tibia) at $\frac{2}{3}$. Wings with costa bearing rather long pubescence (hardly

bristles); R_3 short, first anteriorly convex, then bent back, then rather strongly curved on to costa, not bearing a veinlet, only about one-quarter longer than first section of R_5; R_5 straight, ending a little before tip of wing, not overpassed by costa; cell ending at about the same level as R_3, median veins distinctly produced beyond cross-vein *im*; no trace of *Cu*1 arising from posterior margin of cell. Abdomen normal, genitalia rather large, but without any long bristles.

Type ♂.

No other species of this subgenus is recorded as having a pointed third antennal segment. In Duda's key (1925 : 82), it runs to *L. ornata* (de Meijere), but in that species the wings have more numerous, better defined hyaline spots, especially on the cross-veins, and the hind tibia bears no bristle. *L. giraffa* Richards, 1938, is rather similar (apart from the antennae) but the hind tibial bristle is smaller and R_3 is longer and less sinuate.

Leptocera (*Trachyopella*) *atoma* (Rondani).

♂, 2 ♀. Previously known from England, Germany, Italy and Madeira.

NEW OR LITTLE-KNOWN SPECIES OF EXOTIC TIPULIDAE (DIPTERA) IV

By Professor Charles P. Alexander, F.R.E.S.

(Massachusetts State College, Amherst, Massachusetts.)

The preceding part under this general title was published in 1945, *Proc. R. ent. Soc. Lond.* (B) **14** : 95–102. At this time I am discussing further new species of crane-flies that were collected by my friend, the late Mr. Alexander Cuthbertson, in Southern Rhodesia and the nearby western section of Portuguese East Africa (Mozambique). The types are preserved in my collection of these flies, and the second specimen of available species is being sent to the British Museum (Natural History).

Dolichopeza (Trichodolichopeza) insincera sp. n.

Size small (wing, female, less than 9 mm.); mesonotal praescutum with four ill-defined brown stripes; femora and tibiae testaceous brown, the tips very vaguely more darkened, tarsi dirty yellow; wings with a brownish tinge, cell *Sc* and the stigma darker brown; three isolated yellowish-white obliterative spots, these being prestigmal, poststigmal and across the fork of M; macrotrichia of wing cells relatively numerous in cells Sc_2 to *Cu*, inclusive; stigmal trichia very few; outer forks of M deep, cell M_1 more than four times its petiole; *m-cu* only moderately oblique in position.

Female. Length about 8 mm.; wing 8·4 mm.

Frontal prolongation of head testaceous yellow above, darker on ventral half; nasus distinct; palpi dark brown, the terminal segment somewhat paler. Head above brownish-grey.

Pronotum brown. Mesonotal praescutum with the restricted ground brown or slightly reddish-brown, with four very slightly darker brown stripes, the intermediate pair separated by a very vaguely indicated darker vitta; posterior sclerites of notum, including pleurotergite, rather dark brown. Pleura obscure brownish-yellow, variegated beneath the wing root and less evidently on the ventral portions by slightly darker brown; dorsopleural membrane dusky. Halteres with stem yellow, knob broken. Legs with coxae obscure yellow, the bases of the middle and hind pairs narrowly infuscated; trochanters yellow, with a small brown spot on inner face near apex; femora and tibiae testaceous brown, the tips very vaguely more darkened; tarsi dirty white. Wings with a brownish tinge, cell *Sc* and the stigma darker brown; relatively broad but inconspicuous paler brown seams over anterior cord and *m-cu*; three yellowish-white spots, prestigmal, poststigmal and across the fork of M, all disconnected; veins brown, except in the whitened obliterative portions. Macrotrichia of cells relatively numerous, in all cells beyond cord, restricted to two or three in the stigma; in cells Sc_2 to M_1, inclusive, they occupy all but the bases of the cells though chiefly restricted to the centres; in cells *2nd* M_2 to *Cu* they occur in the extreme outer end, becoming still more sparse in cells M_4 and *Cu*; veins unusually delicate. Venation: *Rs* relatively long, straight and oblique, more than one-half longer than the basal section of R_{4+5}; vein R_1 meeting R_2 at almost a right angle, the latter perpendicular; R_{1+2} evidently preserved as a whitish element that forms the outer end of stigma; outer forks of M deep, cell M_1 being more than four times its petiole; *m-cu*

more than one-half its length before the fork of *M*, less oblique than in *flavifrons*; cell 2*nd A* relatively wide.

Abdomen, including the pleural membrane, dark brown to brownish-black, not or only vaguely patterned with obscure yellow (abdomen of type filled with eggs and badly shrunken); genital shield fulvous brown.

Holotype, ♀, SOUTHERN RHODESIA: Vumba Mountains, March 1935 (*Cuthbertson*).

Dolichopeza (*Trichodolichopeza*) *insincera* is very different from its regional allies in the unbrightened tips of the femora and tibiae. It is more nearly related to various species from the Cape District, perhaps being closest to *D.* (*T.*) *flavifrons* Alexander, of the Caledon Division. It differs from these various species in the coloration of the thorax, and in the venation and trichiation of the wings. The South African species of *Trichodolichopeza* Alexander have been discussed in an earlier paper by the author (1925, *S. Afr. J. nat. Hist.* **5** : 39–48).

Dolichopeza (Trichodolichopeza) vumbicola sp. n.

Allied to *albogeniculata*; mesonotum brown, without pattern, the humeral region of praescutum broadly obscure yellow; legs brown, the genua narrowly but conspicuously snowy-white; wings with a brownish tinge, the dark brown stigma preceded and followed by very conspicuous whitish obliterative areas; wing-tip, anterior cord and *m-cu* seamed with brown; abundant macrotrichia in outer cells of wing; cells of outer medial field relatively shallow, M_1 about three times its petiole; abdominal segments dark brown, each with a central transverse yellow ring; male hypopygium with the outer dististyle glabrous and dilated at base, the outer two-thirds very slender; apex of inner dististyle with three or four strong scattered teeth.

Male. Length about 9 mm.; wing 10·5 mm.; antenna about 2·6 mm.

Frontal prolongation of head pale yellow above, more infuscated on ventral half; nasus long and conspicuous; basal three segments of palpi testaceous yellow, terminal segment broken. Antennae with scape and pedicel light yellow, flagellum dark brown; antennae relatively long, broken beyond the ninth segment, when entire being approximately one-fourth the length of wing; longest verticils unilaterally distributed on upper surface, on the intermediate segments being a little shorter than the segment; a single short verticil on lower face near base; remainder of segment with a short dense pale pubescence. Front and anterior vertex clear light yellow, the posterior vertex somewhat more darkened, especially on sides; vertical tubercle low and entire.

Pronotum testaceous, the central and lateral portions slightly darker brown. Mesonotum brown, without pattern, the humeral region of praescutum broadly obscure yellow, the lateral border restrictedly grey. Pleura testaceous yellow, the propleura, ventral anepisternum, ventral sternopleurite, and an area below the wing-root slightly infuscated. Halteres brown, base of stem restrictedly yellow, knob dark brown. Legs with the coxae chiefly testaceous yellow, the fore pair vaguely darkened on outer faces; trochanters yellow; femora pale brown, the bases narrowly yellow, the tips narrowly but conspicuously snowy white, preceded by a subequal, more brownish-black ring; tibiae brown, the extreme bases whitened, the amount a little less than on the femora, the tips weakly more darkened; tarsi obscure pale yellow. Wings with a brownish tinge, variegated by darker brown and whitish subhyaline; stigma dark brown, conspicuous; paler brown areas in the costal field, at wing apex, and as seams over the anterior cord and *m-cu*; whitish obliterative areas very conspicuous, especially a larger one before cord, extending from *C* across M_{1+2+3} into the extreme bases of cells R_5 and M_3; a smaller but equally well-defined poststigmal area just beyond R_2; veins brown, except in the whitened obliterative areas. Numerous macrotrichia in the stigma and in the outer cells, including the distal ends of cells Sc_2

to M_3, inclusive, in cells R_3 and R_5 occupying about the outer two-thirds of cells. Venation: *Rs* short, oblique, subequal to *r-m*, originating opposite Sc_2; R_2 meeting R_1 at an angle, with indications of persistence of vein R_{1+2} along the extreme outer end of the stigma to the costal border; cells of outer medial field shallower than in *albogeniculata*, cell M_1 being about three times its petiole; vein M_3 strongly arcuated on its basal half.

Abdomen ringed with dark brown and yellow, the latter colour occupying the broad central portion of each segment; subterminal segments more uniformly infuscated; hypopygium obscure brownish-yellow. Male hypopygium with the median area of tergite blackened but virtually smooth-margined; lateral angles of this flange a trifle produced and bearing about ten short peg-like spines, chiefly at apex. Outer dististyle dilated on the glabrous basal third, thence slender, gradually narrowed to the tip, the surface with scattered setae of moderate length. Inner dististyle a little longer, more strongly curved, at apex narrowly blackened and provided with three or four strong scattered teeth.

Holotype, ♂, Southern Rhodesia: Vumba Mountains, March 1935 (*Cuthbertson*).

The most similar described species is *Dolichopeza* (*Trichodolichopeza*) *albogeniculata* Alexander, of Uganda, still known to me only in the female sex. This differs from the present fly in the details of coloration, in the distribution of macrotrichia in the wing cells, and in the venation, as the deeper outer medial cells.

Limonia (Limonia) ditior sp. n.

Allied to *subapicalis*; size medium (wing, male, 12 mm.); general coloration of thorax greenish-yellow, the praescutum with a central black stripe that is split by a capillary grey vitta; thoracic pleura restrictedly patterned with brown; legs black, the tips of the femora narrowly obscure yellow, enclosing a still narrower dark subterminal ring; wings light yellow, with a restricted brown pattern, including a few major spots and seams, with some spots in various cells; cell R_3 narrowed outwardly, cell 1*st* M_2 irregular in outline; abdomen uniformly brownish-yellow; male hypopygium with four long rostral spines.

Male. Length about 9 mm.; wing 12 mm.

Rostrum and palpi black. Antennae with the scape and pedicel black; first two flagellar segments brownish-black, the succeeding ones paling to greenish-yellow, the elongate terminal segment again darkened; basal flagellar segment short-oval, with very short glabrous apical necks; terminal segment elongate, nearly one-half longer than the penultimate. Head above brownish-grey; anterior vertex very narrow, reduced to a linear strip.

Pronotum light yellow. Mesonotal praescutum with the ground greenish-yellow, with a conspicuous median black stripe that is split by a capillary ground vitta, the stripe wider behind; no lateral praescutal stripes; scutal lobes, scutellum and central portion of mediotergite blackened, the latter area more expanded behind; parascutella and pleurotergite greenish-yellow. Pleura greenish-yellow, with an incomplete and relatively inconspicuous brown stripe extending from the cervical region across the propleura and ventral anepisternum, ending at posterior portion of latter; ventral sternopleurite even more vaguely darkened. Halteres with stem and base of knob pale yellow, the apex of latter broken. Legs with all coxae and trochanters greenish-yellow; femora black with the extreme base and wider apex obscure yellow, the latter enclosing a subterminal dark brown ring that is more than twice as wide as the actual pale apex; tibiae and tarsi black. Wings light yellow, the prearcular and costal fields more saturated; a relatively restricted brown pattern, including somewhat larger marks beyond arculus in bases of cells *R* and *M*; origin of *Rs*; fork of *Sc*; stigma and a confluent seam along cord, this area very irregular in outline, enclosing two pale spots in the stigma and sending spurs outward along the

various veins that enter the cord; outer end of cell 1*st* M_2, this further connected with seams over the outer medial veins and more or less connected across the outer radial field with a comparable seam over the outer half of vein R_3; elsewhere on disk a few additional scattered spots, more or less confluent, not evident in the cubital and anal cells; in cell *C* a series of smaller, darker brown dots, lacking in cell *Sc*; veins light yellow, darkened in the brown markings. Venation: Sc_1 ending about opposite six-sevenths the length of the long arcuated *Rs*, Sc_2 a short distance from the tip; R_2 in transverse alignment with the free tip of Sc_2; branches of *Rs* extending generally parallel to one another, more approximated on the outer third, so cell R_3 at margin is only a little more than twice its width near base; cell 1*st* M_2 long, irregular in outline, widened outwardly, *m* only about one-third as long as the angulated basal section of M_3; M_4 shorter than M_{3+4}; *m-cu* subequal to the distal section of Cu_1, placed shortly before the fork of *M*; vein 2*nd A* sinuous.

Abdomen, including hypopygium, uniformly brownish-yellow. Male hypopygium with the caudal border of tergite strongly convexly rounded, with a fringe of long pale setae just back from the border. Basistyle relatively large, its area exceeding that of the ventral dististyle; ventromesal lobe simple. Dorsal dististyle a slender curved rod, the tip decurved into a spinous point. Ventral dististyle long-oval, the main body narrowed outwardly, its apex obtuse; rostrum long and slender, with a close group of four elongate spines at base, these from a slightly developed common tubercle; a fleshy setiferous lobe on face of style near base of rostrum is tipped with two strong setae. Gonapophysis with the mesal-apical lobe elongate, very gradually narrowed to the slender tip. Apex of aedeagus bilobed.

Holotype, ♂, SOUTHERN RHODESIA: Vumba Mountains, March 1935 (*Cuthbertson*); No. 4133.

Although it is evidently related to several other African species of the subgenus, including *Limonia* (*Limonia*) *subapicalis* Alexander, the present fly differs conspicuously in the coloration of the body, and especially of the legs. In this particular group of forms there occur both species with heavily patterned wings and others with wings immaculate or virtually so. There is likewise a great range in physical size, but from the structure of the male hypopygium it seems certain that all of these species are allied among themselves.

Oxydiscus (Oxydiscus) vumbensis sp. n.

Size relatively large (wing, female, over 7 mm.); general coloration of body black; halteres darkened, the base of stem restrictedly yellow; femora obscure brownish-yellow, with a nearly terminal brownish-black ring; tibial spurs elongate; wings obscure yellow, heavily patterned with brown clouds, including a marginal series at ends of the longitudinal veins; outer cells of wing with macrotrichia, including a stigmal series; Sc_1 ending before level of fork of *Rs*, Sc_1 long, about four-fifths R_{2+3+4}; vein R_2 atrophied; cell M_1 lacking; tip of vein 2*nd A* strongly curved into the margin; ovipositor with valves blackened basally, the tips of the cerci paling to yellow.

Female. Length about 7 mm.; wing 7·2 mm.

Rostrum and palpi black. Antennae broken. Head blackened.

Thorax black, including the pleura, the surface slightly opaque. Halteres dusky, the base of stem restrictedly yellow. Legs with the coxae testaceous yellow, very narrowly more darkened at bases; trochanters obscure yellow; femora obscure brownish-yellow, with a brownish-black subterminal ring, this more than three times the narrow yellow apex; tibiae light brown, the tips narrowly infuscated; tarsi light brown, the outer segments a trifle darker; tibial spurs long and conspicuous, their length about two-thirds the

diameter of the tibia opposite their insertion; claws nearly straight. Wings with the relatively restricted ground obscure yellow, heavily patterned with brown, including conspicuous solid clouds at stigma, origin of *Rs*, Sc_2, cord and outer end of cell 1*st* M_2, and as marginal areas at ends of the longitudinal veins; other brown washes along veins *Cu* and R_5; veins brownish-yellow, darker in the patterned areas. Macrotrichia in all outer cells from R_2 to M_4, inclusive, chiefly restricted to the outer ends of the cells, including the distal third of cells R_4 and R_5; stigmal trichia numerous; squama with two or three setae of unusual length, these subequal in length to the width of the wing opposite their origin. Venation: Sc_1 ending just before level of fork of *Rs*, Sc_2 some distance from its tip so that Sc_1 alone is about four-fifths R_{2+3+4}; *Rs* angulated at origin; R_{2+3+4} in longitudinal alignment with R_{2+3}; R_2 not preserved; inner ends of cells R_4, R_5 and 1*st* M_2 in approximate transverse alignment; cell M_1 lacking; *m-cu* from about one-fourth to more than one-third its length beyond the fork of *M*; tip of vein 2*nd A* curved into the anal margin so as to be perpendicular at border; anterior arculus preserved.

Abdomen with proximal and outer segments brownish-black, the intermediate segments destroyed. Ovipositor with the shield brown, the valves more blackened, the tips of the slender cerci paling to yellow.

Holotype, ♀, Southern Rhodesia: Umtali, Vumba Mountains, January 1935 (*Cuthbertson*); No. 4028.

The most similar regional species is *Oxydiscus* (*Oxydiscus*) *polysticta* (Edwards), of the island of São Thomé in the Gulf of Guinea. This differs in the coloration of the body, halteres and wings, and in the details of venation, particularly the strongly decurved tips of veins Cu_1, 1*st A* and 2*nd A*. In the present fly, only 2*nd A* is so curved to the margin.

Austrolimnophila ephippigera sp. n.

General coloration of thorax yellow, the mesonotal praescutum with a blackened discal area that includes the posterior three-fourths of the praescutum, the scutum and the scutellum; rostrum and scape yellow; halteres yellow; femora black, yellow on about the proximal fifth; tibiae and tarsi light brown, the tips darker; wings with a strong yellowish tinge, restrictedly patterned with large pale brown clouds; cell 1*st* M_2 short-subrectangular, with *m-cu* beyond midlength; abdomen yellow, the dorsal margins of sternites two to seven, inclusive, with a narrow blackened area; subterminal segments with a very narrow blackened ring.

Female. Length about 10 mm.; wing 10·5 mm.

Rostrum yellow; palpi brownish-black. Antennae with scape light yellow; pedicel and first flagellar segment yellow at bases, darkened outwardly, remaining flagellar segments passing into black; flagellar segments long-fusiform; longest verticils a little shorter than the segments. Head yellow; anterior vertex narrow, only about one-half wider than the diameter of the scape; head not particularly narrowed posteriorly.

Pronotum yellow. Mesonotal praescutum light yellow in front and on sides, the posterior three-fourths of disk with three black stripes, the surface subnitidous to weakly opaque by a grey pruinosity, the interspaces faintly paler; scutal lobes similarly blackened, the median area heavily grey pruinose; scutellum dark brown, pruinose, parascutella obscure yellow. Postnotum and pleura abruptly golden-yellow, including the dorsopleural membrane, the colour contrasting conspicuously with the blackened discal saddle. Halteres obscure yellow. Legs with all coxae and trochanters yellow; femora black, the bases rather narrowly yellow, the amount subequal on all legs, including about the proximal fifth; tibiae light brown, the tips narrowly dark brown; tarsi pale brown, the terminal segments darker. Wings with a strong yellowish tinge, the prearcular and costal portions somewhat clearer yellow; a restricted pale brown pattern, the clouds arranged as follows:

very restrictedly above the posterior arculus; large areas at origin of *Rs*, cord and outer end of cell 1*st* M_2; a smaller spot over R_2 and adjacent veins; apical border of wing very slightly darkened, more evident in the type; veins brown, those of the prearcular field more yellowed. Venation: Sc_1 ending about opposite one-third R_{2+3+4}, Sc_2 longer, near its tip; R_2 longer than R_{1+2}; R_{2+3+4} from one-third to about one-half R_{2+3}, gently arcuated; petiole of cell M_1 relatively short, from one-half longer than to twice m; cell 1*st* M_2 short-subrectangular, slightly widened outwardly, with *m-cu* at near two-thirds the lower face; anterior arculus atrophied.

Abdomen yellow, sternites two to seven, inclusive, with a narrow but conspicuous blackened area on dorsal margin, closer to anterior border than to the posterior margin; succeeding segments and base of ovipositor blackened to form a narrow ring.

Holotype, ♀, Southern Rhodesia: Umtali, Vumba Mountains, altitude 5400 feet, October 1940 (*Cuthbertson*). *Paratopotype*, 1 ♀; British Museum (Natural History).

Most nearly allied to species such as *Austrolimnophila diffusa* (Alexander) and *A. distigma* (Alexander), both of British Tropical Africa, differing conspicuously in the coloration of the body, legs and wings, and in the details of venation. Various African species that have been considered to fall in the genus *Pseudolimnophila* Alexander seem more properly referable to *Austrolimnophila* Alexander, as re-defined by Edwards (1938, *Trans. Soc. Brit. Ent.* **5** : 67–8). It may be observed that the important character of a broken arculus, as discussed by Edwards, has not been correctly defined; according to him, the missing element of the arculus in the present genus is interpreted as being a cross-vein; actually it is the basal section of the main stem of vein *M*, immediately after its departure from the basal fusion with vein *R*. The so-called anterior arculus in the Diptera is this section of *M*; the posterior arculus is a supernumerary cross-vein connecting vein *M* with vein *Cu*.

Limnophila (Elaeophila) subannulata sp. n.

General coloration of mesonotum grey, restrictedly patterned with brown; thoracic pleura restrictedly grey, conspicuously striped longitudinally with brownish-black, the most dorsal area widest, passing above the root of the halteres, the latter dark brown; coxae banded with dark brown; legs yellow, the femora with a narrow pale brown subterminal ring; wings pale yellow, heavily spotted and dotted with dark brown, including a series of about five larger costal areas, the stigmal one largest; a pale spot at tip of vein R_5 encircled by a lunate darkening extending from the tip of vein R_4 to M_1; vein 2*nd A* bent into the anal margin at a right angle.

Sex ?—Wing 7 mm.

Head broken.

Mesonotum grey, restrictedly patterned with brown, including small areas on the praescutum that represent remnants of the usual stripes; lateral and sublateral praescutal stripes behind the pseudosutural foveae larger and more conspicuous. Pleura restrictedly grey, conspicuously striped longitudinally with brownish-black, the dark colour much more extensive than the ground, including a wider more dorsal stripe extending from the cervical region across the dorsal pleurites to the abdomen, crossing the pleurotergite and sides of mediotergite; a second narrower, more ventral stripe includes a ring on the fore coxa, thence caudad across the dorsal sternopleurite, passing beneath the halteres; ventral sternopleurite dark brown; dorsopleural membrane chiefly pale. Halteres dark brown, the base of stem restrictedly pale. Legs with the coxae light brownish-grey at ends, the central portion of outer face patterned with darker; trochanters obscure yellow, darker beneath; remainder of legs light yellow, all femora with a narrow, pale brown subterminal

ring that is about equal in width to the pale apex; setae of legs long and conspicuous, pale; tibial spurs black, conspicuous; claws simple. Wings with the ground colour pale yellow, heavily spotted and dotted with dark brown, including a series of about five larger costal areas, the stigmal marking largest, produced caudad over the fork of R_{2+3+4} and into or across cell R_4; dark area at origin of *Rs* narrow, extending from *C* almost to vein *M*, not confluent with the narrow seam over the supernumerary cross-vein; cord, outer end of cell 1*st* M_2, fork of M_{1+2}, and a seam over the supernumerary cross-vein narrowly brown; remainder of cells with almost circular or subcircular brown spots that are in part confluent; longitudinal veins with dark marginal spots, lacking on R_5, the area at R_4 confluent with the one on M_1, to form a lunate darkening that encloses a pale spot at the tip of the wing; veins yellow, darker in the patterned areas. Venation: Sc_1 ending immediately before fork of *Rs*, Sc_2 near its tip; *Rs* angulated at origin, in longitudinal alignment with R_{2+3+4}, the latter about twice the basal section of R_5; supernumerary cross-vein in cell *M* lying opposite or basad of origin of *Rs*; *m-cu* about one-half its length beyond the fork of *M*; vein 2*nd A* before apex strongly arched, slightly widening the cell, the tip entering the posterior border at a right angle.

Abdomen brownish-black on basal portion, the outer segments broken.

Holotype, Sex? Southern Rhodesia: Vumba Mountains, March 1935 (*Cuthbertson*); No. 2397.

The only similar described species is *Limnophila* (*Elaeophila*) *marmorataeformis* (Riedel), of British East Africa. This differs in the coloration of the body, the uniformly yellow legs, and in the details of wing pattern and venation, as described.

Limnophila suffilata sp. n.

General coloration dark brown, pruinose, the praescutum with three darker brown stripes, the median one divided in front by a paler line; halteres yellow; wings relatively narrow, weakly tinged with brown, the oval stigma a trifle darker brown; male hypopygium with the outer dististyle nearly parallel-sided, the outer apical angle produced into a strong curved spine, with a smaller spinule on its outer margin; outer surface of style with conspicuous setae; inner dististyle with its distal portion very narrow, terminating in a single seta; gonapophysis small, terminating in two or three strong spinous points; aedeagus unusually small and weak.

Male. Length about 5·5 mm.; wing 6 mm.

Rostrum and palpi brownish-black. Antennae with scape and pedicel dark brown; flagellum broken. Head dark brown; anterior vertex broad, approximately four times the diameter of scape.

Pronotum dark brown, sparsely pruinose. Mesonotum dark greyish-brown, the praescutum with three darker brown stripes, the median one a little paler on central portion, especially in front; pseudosutural foveae large, reddish-brown; tuberculate pits black, relatively large but separate, the distance between them about equal to the narrow diameter of either, not confluent as in *filata*; posterior sclerites of notum chiefly dark grey. Pleura dark brown, sparsely pruinose; dorsopleural membrane a little brightened. Halteres yellow. Legs with the coxae dark brown, sparsely pruinose; trochanters obscure yellow; remainder of legs broken. Wings relatively narrow, weakly tinged with brown, the stigma oval, a trifle darker brown; prearcular cells, including the veins, yellow; remaining veins pale brown. Veins beyond cord, excepting R_{2+3+4}, with numerous long trichia. Venation: Sc_1 ending immediately before fork of *Rs*, Sc_2 much longer, close to extreme tip of Sc_1; R_{1+2} fully twice as long as R_2, the latter faintly indicated; *Rs* elongate, beyond its base nearly straight; R_{2+3+4} subequal in length to the long cell 1*st* M_2; R_{2+3} a little longer than R_2; cell M_1 evidently lacking, if present abnormally short; cell 1*st* M_2 rect-

angular, slightly widened outwardly, both *m* and basal section of M_3 subequal and in transverse alignment; *m-cu* at midlength of the cell; cell *2nd A* narrower than in *filata*, the vein gently sinuous on its distal third.

Abdomen, including hypopygium, brownish-black. Male hypopygium with the outer dististyle nearly parallel-sided, the outer apical angle produced into a strong curved spine, with a smaller spinule on the outer margin of the latter; outer surface of style with conspicuous setae over most of the length. Inner dististyle very narrow on outer third, terminating in a single very strong seta. Gonapophysis small, terminating in two or three strong spinous points. Aedeagus unusually small and weak.

Holotype, ♂, Portuguese East Africa (Mozambique): Border Farm, Rio Jardin, April 1929 (*Cuthbertson*); No. 2386.

The closest relative of the present fly is *Limnophila filata* (Walker), of northern Europe; *L. batava* Edwards, likewise from northern Europe, is more distantly related. The unique type of the present fly has only a single wing preserved but in this, cell M_1 is evidently lacking. In *filata*, the cell while normally present is frequently lacking in one or both wings of an individual fly. The present species is distinguished from *filata* by the details of venation and the structure of the male hypopygium, especially the outer dististyle, gonapophyses and aedeagus.

SYNONYMIC NOTES ON SOME ORIENTAL CETONIINE BEETLES, WITH DESCRIPTIONS OF TWO NEW SPECIES

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In 1941 (*Ann. Mag. nat. Hist.* (11) **8**: 73) I published some synonymic notes upon certain species of this subfamily described by the late M. Auguste Bourgoin, whose collection of Cetoniinae is now in the British Museum. Compliance with Dr. R. Paulian's request for assistance in his undertaking of a systematic work upon the Lamellicorn beetles of French Indo-china has resulted in the discovery of some additional synonymy and this, by his desire, is recorded here.

It was M. Bourgoin's habit to label with particular care the specimens he selected as types of the species he described as new, but unfortunately he also adopted the very misleading practice of attaching the word " type " to specimens acquired later which he believed to belong to the same species but not the same sex as the true type. For example, *Trichius pullatus* Bourgoin was described by him in 1915 and a male example labelled as " Type." Two female specimens, differing greatly in sculpture and pattern, were labelled " Type " in an identical manner. These prove to have been captured three years later than the date of the description. With them were taken two other females named by him, I believe correctly, as *Trichius elegantulus* Moser, described many years earlier. A male taken at the same time and place shows the actual type of *pullatus* to belong to *elegantulus*, while the spurious female types, so-called, belong to another species.

At the time of publishing the paper mentioned above I had not discovered this reprehensible practice and was led by it in certain cases to conclusions which I have since found incorrect. In sinking *Rhomborrhina vuilleti* Bourgoin as a synonym of *R. subopaca* I relied upon a specimen labelled " Rhomborrhina Vuilleti, ♂. Type. Bourgoin." This specimen was actually captured three years later than the date of the description and the real type, a female, being rather larger and broader, is by no means certainly of the same species. It will be better to treat them as distinct until evidence of their identity is obtained.

Rhomborrhina nigriventris Bourgoin is synonymous with *R. distincta* Hope, the colour of the lower surface of this species being very inconstant; and *R. bossioni* Bourgoin appears to be a variety of *R. mellyi* Gory & Percheron with red legs.

The very variable coloration of some of the numerous species of the remarkable genus long known as *Macronota* and the surprising persistence of an almost identical pattern through groups of other species have resulted in much confusion, and this has not been diminished by the rather numerous forms described as new by Bourgoin. The name *Macronota* was introduced by Hoffmansegg in 1817 for those Cetoniinae in which the pronotum has a posterior lobe, but no species were assigned to it until 1823, when Wiedemann described three Oriental forms as belonging to it. Dr. Kuntzen (1929, *S.B. Ges. naturf. Fr. Berl.* **1928**: 168) has stated that, two of these three having been removed in 1842 to the genus *Clinteria*, the remaining species, *Macronota anthracina*

Wiedemann, must be accepted as the genotype of *Macronota*. Gory and Percheron incorrectly applied that name to the black phase of *M. haematica* Perty but it cannot be doubted that it belongs to the insect known as *Thaumastopeus pullus* Billberg, *Thaumastopeus* becoming a synonym of *Macronota*. Dr. Kuntzen proposes to use for the genus so long known as *Macronota* the name *Coilodera*, introduced by Hope in 1831 but not characterised until 1842, when Burmeister amended it to *Coelodera*, which, however, was already in use. *Coilodera* is therefore now substituted for *Macronota*.

Three supposed new species were assigned by Bourgoin to the genus *Bombodes*, which I am unable to recognise as distinct from *Coilodera*, all of them taken at Chapa in May, 1916. *B. nigellus* Bourgoin is a broad insect with very dark-haired pronotum, *B. vitalisi* and *affinis* (both names previously used in the present genus) narrower, with reddish hair. *B. affinis* was distinguished by Bourgoin from *vitalisi* as being smaller, with fulvous hair upon the hind angles of the pronotum. I can detect no difference in the size of his specimens and the difference in the colour of the hair seems too slight to be considered of any importance. Since a new name must be found for the narrow form (*vitalisi* + *affinis* of Bourgoin) I propose to call it **Coilodera laeta** nom. nov.

I published in 1941 the synonymy of *Macronota vouauxi* and *argodi* of Bourgoin with *Taeniodera furcata* Fairmaire, of which the Bourgoin collection contained a female specimen apparently labelled by the author as type. In this group of species the males can be distinguished by the hind tibiae having a close fringe of hairs, while the females have the pronotum and pygidium rougher than the males. Bourgoin having labelled as type of *vouauxi* a male specimen which agreed in all but the sexual characters with the *furcata* type, the synonymy appeared to be clear, but reference to the description has revealed that the real type of *vouauxi* is a female, of which, although the complicated pattern of the elytra is the same as that of *furcata*, the head, pronotum and pygidium are without the pale markings, while the pronotum and pygidium are more roughly sculptured. The male of the true *vouauxi* is therefore unknown, while the false *vouauxi* alone belongs to *furcata* Fairmaire.

Coilodera argodi Bourgoin was described in 1916 from specimens of both sexes taken by Vitalis at Chapa, and the female distinguished, among other features, by the rugose head, pronotum and pygidium. In the following year Bourgoin described *C. elegantula*, mentioning both sexes, which are said to have been also taken by Vitalis at Chapa. The species is said to be shorter in form and the female, of which only one specimen is recorded, was distinguished solely by its strongly toothed middle tibiae. Specimens of each sex were carefully labelled " Type." The male, if slightly less in total length, bears the closest resemblance to that of *argodi* and the identical form of the very peculiar asymmetrical aedeagi shows them to be undoubtedly conspecific. The female " type " bears a label in the handwriting of Vitalis showing that it was captured, not at Chapa, but at Hagiang. I can find no reason for the supposition that the toothed middle tibia is a sexual feature. Accepting the male, to which alone the recorded habitat belongs, as the real type, I now regard *C. argodi* as a valid species, *elegantula* as synonymous with it and the so-called female *elegantula* as representing yet another species. The male and female forms of *C. argodi* were taken together both by Vitalis at Chapa and by Dupou at Cho Ganh.

The nearly related *C. donckieri* Bourgoin, from Yunnan, was described from females alone (with the head, pronotum and pygidium immaculate) and it seems almost certain that the previously described *Taeniodera moupinensis* Fairmaire, which occurs with it both in Yunnan and Foo-chow, is its male.

Coilodera zebraea Fairmaire, *idolica* Janson, *salvazai* Bourgoin, *soror* Bourgoin, *garnieri* Bourgoin and *luteovaria* Bourgoin form another group of species with an almost identical pattern, of black and yellow, instead of black, red and yellow, as in the group just mentioned. The two sexes give rise to similar difficulties, for, while males of the first four are known, the last two were described from females only. It seems likely that the female *garnieri* and the (later described) male *soror* belong to the same species, but evidence of this is still lacking. *C. zebraea* and *salvazai* differ from these by the wholly yellow pygidium and could hardly be distinguished from one another except that the hind tibiae in the male of *salvazai*, the type of which is a unique specimen, are longer and have the usual pair of long movable spurs at the end, while in the male of *zebraea* one of these spurs is, very strangely, missing. The aedeagi being very dissimilar, the two forms must be regarded as specifically distinct.

Coilodera procera Bourgoin is the Formosan species called by Moser the subspecies *formosana* of *tonkinensis* Moser. Although of five years earlier date, this name will not supersede *procera*, since it was used previously by Niijima and Kinoshita for a species, and by Moser himself for two other subspecies of the same genus.

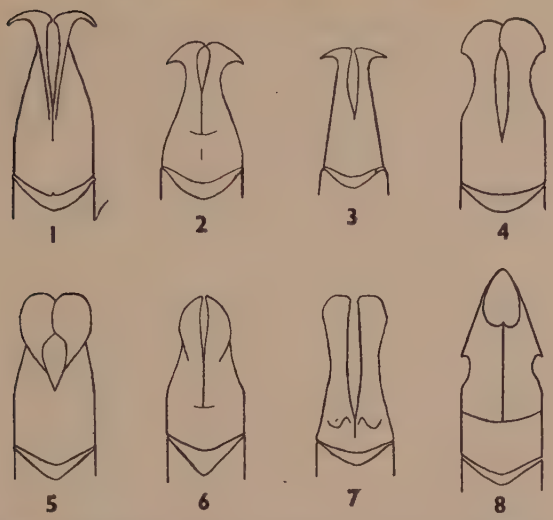
The Sumatran *Macronota aurantiaca* Vollenhoven, treated by Wallace as synonymous with *M. picta* Guérin, has, according to the figure, a differently shaped thorax, but there appears to be nothing by which *Carolina fruhstorferi* Schoch can be distinguished from *picta*.

The vague descriptions and unreliable habitats given by Gory and Percheron for *M. egregia*, *biplagiata* and *malabariensis* have led to much confusion, but the figures of the last two species seem to make their identity reasonably certain. Both sexes of the unfortunately-named Indo-Malayan *malabariensis* were figured by me in 1910 (*Fauna of British India*, Coleoptera, Pt. 1, Cetoniinae and Dynastinae : 53) the dis-similar female having received the name *annae* from Wallace, a name omitted from the catalogues. This species inhabits the Malay Peninsula, Indo-china and Assam, and *simillima* Bourgoin is inseparable from it in my opinion, identity in the aedeagi (fig. 3) and all other features outweighing the absence of the minute spine upon the middle tibia and the pale pygidial band of the single male specimen, probably due to attrition or individual aberration.

Coilodera coomani Bourgoin is a much larger but otherwise very similar species, of which the aedeagus (fig. 1) is markedly different.

Kraatz, after describing as *Taeniodera borneensis* a species closely resembling *malabariensis* except in the complete absence of the white markings of pronotum and pygidium, afterwards treated this, as well as *histrio* Burmeister, as varieties of it; but a study of the aedeagi of the males (figs. 2 and 6) shows this view to be untenable. A female specimen in the British Museum was the type both of *histrio* Burmeister and *rafflesiana* Westwood, and *cordata* Schoch is another synonym for this species, which has the pygidium immaculate but the pronotum partly or entirely bordered by a white line. *C. borneensis* and *histrio* both occur in the Malay Peninsula and Borneo but not in Java, while *C. haematica* Perty and *egregia* Gory & Percheron (aedeagi, figs. 5 and 4) seem to be quite confined to Java. Gory and Percheron's figure of *biplagiata* shows it to be one of the innumerable colour-phases of the very abundant *haematica*, to which, although he overlooked its oldest name, Kraatz gave many varietal names.

The original figure of *C. egregia* Gory & Percheron appears to represent the elytra as entirely red except at the tips, but the description of them as bearing a " tache irregulière longitudinale " agrees with the plainly recognisable and fairly constant Javanese species figured by Guérin under this name.



FIGS. 1–8.—Aedeagi of the males of 1, *Coilodera coomani* Bourgoin; 2, *C. borneensis* Kraatz; 3, *C. malabariensis* Gory & Percheron; 4, *C. egregia* Gory & Percheron; 5, *C. haematica* Perty; 6, *C. histrio* Burmeister; 7, *C. fenestrata* sp. n.; 8, *C. angustata* sp. n.

The rather prolonged study of this peculiarly difficult genus necessary for the proper elucidation of Bourgoin's species has resulted in the discovery of two apparently undescribed members of the present group which I have accordingly described here. The following table will show their relationship to other related species.

Pygidium with a pale median band.
  Not large; pale ventral lines united . *malabariensis* Gory & Percheron.
  Very large; pale ventral lines not united . . . *coomani* Bourgoin.
Pygidium entirely dark.
  Pronotum transverse.
    Scutellum white-bordered.
      Pronotum partly or completely white-bordered *histrio* Burmeister.
      Pronotum not white-bordered . . . *borneensis* Kraatz.
    Scutellum not white-bordered.
      Each elytron with a long red patch. . *egregia* Gory & Percheron.
      Each elytron with an oval orange spot . . **fenestrata** sp. n.
  Pronotum not transverse . . . . . **angustata** sp. n.

The extreme variability in colour and pattern of the related Javan *Coilodera haematica* Perty makes it impossible to include it in the above key, but these eight related forms can be distinguished without difficulty by means of the genitalia of the males. Although the paramera of the aedeagus are sometimes partly soft anteriorly, the fully chitinised portion exhibits remarkable differences, as shown in the accompanying figures.

Coilodera fenestrata sp. n.

Black, opaque above, with the head, legs and lower surface shining, each elytron decorated with a rather large, longitudinally oval yellow patch, situated in the middle and extending almost to the inner and outer margins, the four anterior ventral sternites or some of them with creamy-white lines on each side and the mesosternal epimera with or without similar whitish tomentum.

Moderately elongate, the head rather closely punctured and clothed like the pronotum

with very fine erect setae; the clypeus moderately bilobed; the pronotum transversely heptagonal, the sides obtusely angulate, nearly parallel behind, the posterior lobe broadly rounded; the sides of the elytra strongly sinuated behind the shoulders and the sutural angle sharp. Pygidium transversely strigose. Mesosternal process rounded and feebly prominent, the metasternum closely punctured and clothed with short hair at the sides; the sides of the abdomen rugulose. Front tibia acutely tridentate, middle and hind tibiae armed with a sharp lateral tooth. ♂, abdomen almost smooth beneath and very feebly impressed in the middle line, the pale lateral lines more or less confluent. Hind tibia acutely produced at the extremity, not fringed. (Aedeagus, fig. 7.) ♀, abdomen convex, punctured. Hind tibia bidentate at the extremity. Length 16–18 mm.

SUMATRA: Medan. MALAY PENINSULA: Selangor (*H. C. Robinson*).

Three males from Medan and one female from Selangor. The elytral pattern of this species is quite distinctive. It most resembles *Coilodera egregia* Gory & Percheron but is rather less elongate and the dorsal ornamentation is paler and differently situated and shaped. The white lateral lines of the abdomen and the unfringed hind tibiae of the male also distinguish the two species. In the three males of *C. fenestrata* there are four white lines, more or less coalescing, and in the single female the hinder margin of the first visible sternite and a broad patch adjoining it upon the second sternite are white. These lines may perhaps be sometimes absent, as in *C. haematica* and other species.

Coilodera angustata sp. n.

Dark green above, with the head, legs and lower surface shining metallic green or red, the pronotum decorated with two sulphur-yellow spots, sometimes united, in the front and lateral angles, the elytra each with a narrow line bordering the scutellum, another short narrow line at the suture behind the scutellum, a minute spot in the middle of the anterior half of each, one near the middle of the suture and one before the extremity. The sides of the thorax and abdomen are also in part sulphur-yellow and the four anterior sternites show narrow yellow lines above. The elytra may be partly brick-red at the base, sides and extremities. The head, pygidium, and sides of the sternum and abdomen are clothed with short yellow hair and the pronotum with minute inconspicuous setae.

Not very elongate, the head densely punctured, carinate in the middle behind, moderately bilobed in front; pronotum nearly as long as it is wide, with the sides obtusely angulate in the middle, convergent in front, parallel behind, the base broadly lobed; elytra strongly sinuated and narrowed behind the shoulders, the apical angles blunt. Pygidium rugose. Mesosternum not produced. Front tibia acutely tridentate, the uppermost tooth minute, middle and hind tibiae bearing a minute lateral tooth. ♂, hind tibia bearing a close fringe beneath, the extremity acutely produced. (Aedeagus, fig. 8.) Length 14 mm.

SUMATRA (*J. R. Gray*); Korinchi, Sungei Kumbang, 4500 ft. (*Robinson and Kloss*, April).

Two male specimens. The ground colour in one example is uniformly dark green and in the other it is diversified by a reddish-brown admixture, the limits of the two colours not sharply defined. This species shows relationship both to the group of forms with which I have here associated it and also, especially in coloration, to *C. ludekingi* Vollenhoven and *lobata* Arrow, in which the pronotum, although differing considerably in shape, is also narrowed in front and not distinctly transverse. *C. angustata* is a small species, rather broad across the shoulders, with a metallic lower surface. The pale yellow tomentum covers a large part of the lower surface but is reduced to slight traces upon the elytra and two spots on each side of the pronotum, which are united in one of the two specimens.

A NEW GENUS AND SPECIES OF FORMICIDAE (HYM.) FROM MAURITIUS

By Horace Donisthorpe, F.Z.S., F.R.E.S.

Dodous gen. n.

Subfamily Myrmicinae : tribe Solenopsidini.

♀. Mandibles armed with three teeth at apex; clypeus dentate; maxillary palpi 1-jointed; labial palpi 1-jointed; antennae 11-jointed, club 3-jointed; pronotum, mesonotum and epinotum each armed with a pair of spines; mesonotum separated from pronotum and epinotum; petiole long, pedunculate, furnished with a node; post petiole very slightly broader than petiole.

♂. Mandibles undeveloped; antennae 12-jointed; mayrian furrows indistinct, epinotum unarmed. Fore-wing : one cubital, open radial cell present; lower margin lobate.

Genotype : **Dodous trispinosus** sp. n.

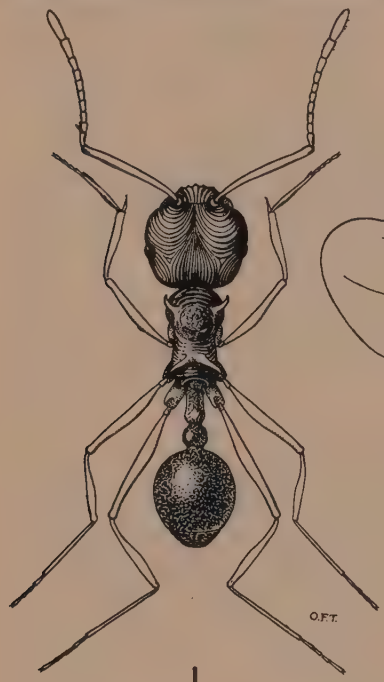
Dodous trispinosus sp. n.

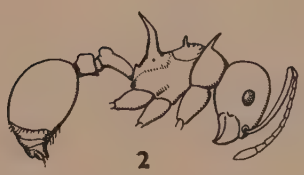
♀. Light reddish or yellowish-brown, legs a little lighter, funiculi and gaster slightly darker; whole body furnished with short fine scattered outstanding yellow hairs.

Head round, slightly longer than broad, cheeks and posterior angles rounded, posterior border somewhat excised. Sculpture of head consisting of ridges which are straight down the centre, spreading out in semicircles on each side and round the antennal foveae, gradually becoming straighter towards the temples and base.

Mandibles long, triangular, powerful, smooth and shining, masticatory border armed with 3 teeth at apex, the two apical ones long and pointed, the one preceding them short but sharp, a very short blunt tooth is present at basal angles; *clypeus* with anterior border projecting in centre, armed with 5 short teeth, the one in centre being most prominent, two small sharp teeth are present situated one on each side outside the projecting central portion, the basal portion is prolonged between the insertion of the antennae and carinae, extending from thence to the apex of the anterior teeth, the outer carina is continued to form the semicircular *frontal carinae*; *frontal area* wanting; *antennal foveae* large, deep, surrounded by circular carinae; *eyes* round, prominent, situated on the upper part of the sides of the head a little behind the centre; *palpi* short, *maxillary palpi* 1-jointed; *labial palpi* 2-jointed; *antennae* long, 11-jointed, *scape* reaching base of pronotum, *funiculus* with all joints longer than broad, 1st and 2nd joints of about equal length, 3rd to 5th shorter, subequal, 6th and 7th a little longer, club 3-jointed, well marked, last joint equal in length to the two preceding taken together. *Thorax* longer than broad, slightly contracted in middle, sculpture consisting of ridges which are coarser than those of the head, circular on the pronotum, enclosing the mesonotum, and along the sides and dorsal surface of the epinotum; *pronotum* with anterior angles rounded, armed on each side with a sharp curved spine; *mesonotum* circular, somewhat prominent, divided from the pronotum and epinotum by the interstice between two of the ridges, rugose in centre and armed on each side before base with a slightly curved spine, which is shorter and blunter than those of the pronotum; a rather deep furrow is present between the mesonotum and epinotum; *epinotum* armed with a pair of long sharp spines, joined together at base, projecting upwards, divergent and slightly curved downwards at apex, declivity behind the base of the spines

transversely striate, and armed with two short sharp teeth at base. Petiole, post petiole and gaster smooth and shining; *petiole* long and narrow, furnished at apex with a node which is rounded above, and slightly broader than peduncle; *post petiole* rounded at sides and above, slightly broader than petiole, with a very short tooth or projection beneath pointing forwards; *gaster* round oval, first segment taking up the greater part of the gaster above. *Legs* long, *femora* and *tibiae* spindle-shaped. Length 4·5–5 mm.





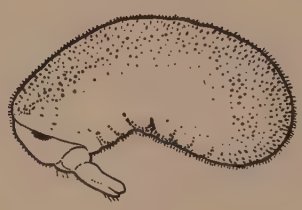


Fig. 1.—*Dodous trispinosus* sp. n. ☿. Fig. 2.—*Dodous trispinosus* sp. n. ☿ in profile.
Fig. 3.—Male. Fig. 4.—Larva.

♂. Shining dark reddish-brown, legs and antennae somewhat lighter, clothed with more abundant outstanding hairs than in the ☿. *Head* transverse, cheeks, posterior angles, and posterior border rounded; *mandibles* undeveloped, represented by very small round hairy bosses; *clypeus* transverse, convex, anterior border rounded; gradually becoming straighter towards the temples and base; *frontal carinae* very short, divergent; *eyes* large, very prominent, situated on each side of the head; *ocelli* moderate, anterior ocellus slightly larger than the other two, situated in a slight depression; *antennae* 12-jointed, all joints longer than broad, *scape* short, only a little longer than 1st joint of *funiculus*, all the other joints longer and of about equal length and breadth, except the last, which is longer and pointed, about equal in length to the two preceding taken together. *Thorax*

broader in front than behind, broadest just before insertion of fore-wing; *pronotum* transverse and narrow anteriorly, broader at sides; *scutum* of *mesonotum* convex and prominent, rounded in front and at sides; *mayrian furrows* indistinct, marked by a few shallow punctures, the space between being also shallowly punctured; *parapsidal furrows* also somewhat indistinct; *prae-scutellum* transverse, very narrow in middle; *scutellum* convex, prominent; *metanotum* transverse, very narrow, with sharp raised edges at sides; *epinotum* with dorsal surface concave in middle, shorter than declivity, angle between dorsal surface well marked, declivity straight, flat. *Petiole* long, with two short blunt teeth, or projections, situated one on each side before node, which is round, but rather flat; *post petiole* rounded above and at sides, not or scarcely broader than node of petiole, a small tooth or projection is present beneath as in the ☿; *gaster* long oval, broadest at apex of first segment, which takes up over half the dorsal surface of the gaster. *Genitalia* exserted in one of the specimens; the *stipites* are rather broad and bluntly pointed, the *volsellae* possess a broad lobe at the base on the outer side (dorsal view), the inner side consisting of long sharply pointed very thin sickle-shaped hooks; the *sagittae* are rather narrow slightly curved appendages, which, however, are not so thin nor so sharply pointed as the hooks of the volsellae.

Legs long and slender. *Wings* dusky and hairy; fore-wing with lower margin of apical half somewhat broadly lobate, pterostigma and veins brown, one fairly large cubital cell is present, no discoidal cell, and the fairly long, radial cell is open. *Long.* 4 mm.

Larva. Dirty yellowish-white (in spirit specimens), of the gourd-shaped type with a crooked neck. The head is prolonged into a beak (the mandibles, etc.); the whole body clothed with short outstanding hairs of different lengths and structure. (*N.B.*—The dark spot in the figure where the eye might be supposed to be is, of course, not an eye at all, as ant larvae never possess eyes.)

Described from a number of workers and two males, Cocotte Mt., Mauritius (*R. Mamet*). Type and ♂ type in British Museum (Natural History). Mr. Mamet took 30 workers, two males, larvae, and pupae from a colony nesting under a flat stone on 27th December 1941 (No. 26); and again in similar circumstances 40 workers, larvae, and pupae, on 6th February 1943 (No. 6). He remarks: "A curious species which when disturbed simulates death."

My best thanks are due to Mr. R. W. Lloyd for kindly providing the drawings.

NEW CRYPTOSTEMMATIDAE (HEMIPTERA) FROM TRINIDAD, BRITISH WEST INDIES

By W. E. China, M.A., F.R.E.S.

The following descriptions are based on material collected by Mr. A. H. Strickland during his investigation of the soil fauna of cacao plantations in Trinidad, and submitted to me for determination. The most recent revision of this family is by McAtee and Malloch 1925 (*Proc. U.S. Nat. Mus.* **67** (13): 1–42, pls. 1–4), and deals with all but ten of the American species. For full bibliography of the family the student should refer to this revision.

The types have been deposited in the British Museum (Natural History).

Subfamily Schizopterinae.

Ptenidiophyes trinitatis sp. n. (figs. 1, a–c, and 2, a–e).

Brachypterous ♀ :—

Colour: Dark chocolate brown, lighter and more reddish on the head and pronotal collar and darker on bases of pronotum and elytra and on scutellum; apices of elytra

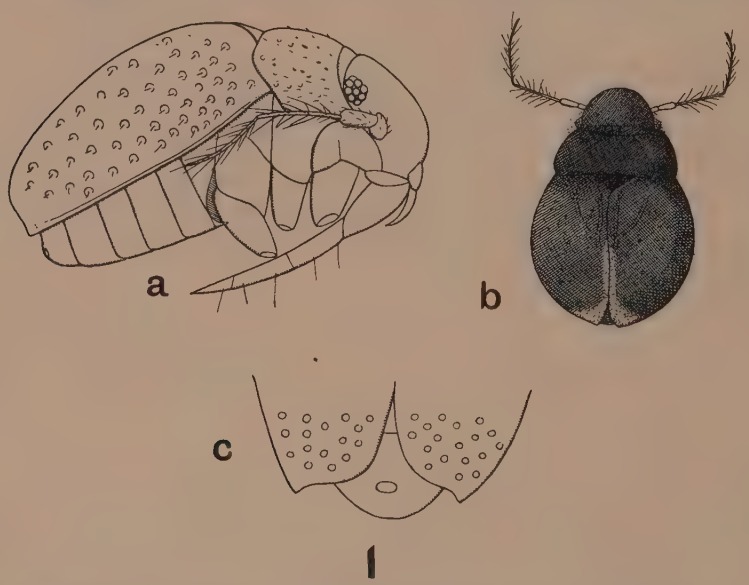


Fig. 1.—*Ptenidiophyes trinitatis* sp. n. ♀. a, lateral view to show long rostrum; b, dorsal view to show colour pattern; c, dorsal view of apex of abdomen and apices of hemi-elytra.

and apical two-thirds of elytral commissure sordid yellow (fig. 1, b), the costal margins rather pale fulvous; clypeus, labrum, rostrum, antennae and legs pale yellow. Venter shading to sordid yellow towards apex of abdomen.

Structure: Head finely granulate (shagreened) with dispersed fine scale-like pubescence,

strongly deflexed, strongly convex, rounded both laterally and longitudinally, broadly rounded anteriorly with the clypeus porrect and prominent; seen antero-dorsally (in full view) about five-sixths as long as wide across eyes (19 : 23); eyes very small but extending a little beyond posterior margin of head on to lateral angles of pronotal collar and consisting of about 12 globular facets; ocelli absent; antennae extending backwards to middle of costal margin of elytra, relative lengths of segments 4 : 5 : 12 : 17, third segment curved; rostrum long, extending to the posterior margin of the second ventral abdominal segment, laterally compressed so that it appears much wider from the side than in ventral view, armed with several long fine bristles, relative lengths of segments difficult to make out but approximately 8 : 5 : 11 : 8 (fig. 1, a); the basal segment much thickened dorso-ventrally. Pronotum convex, finely granulate with a regular dispersed pubescence of extremely short depressed pale scale-like bristles; posterior margin very broadly, shallowly concave (emarginate), lateral margins convex, anterior collar rather less than one-third as long in middle as posterior lobe (3 : 10). Propleura conspicuously hemispherically swollen and visible in dorsal view behind the eyes. Scutellum shorter than wide at base (5 : 13). Hemielytra strongly convex, the costal margins convex seen from above, the actual margins distinctly deflexed, then very narrowly reflexed; surface with a distinct regular puncturation and regularly dispersed very short, pale, depressed, scale-like bristles; puncturation easily visible only in transverse lighting; venation obsolete but some indication of the claval fork; apex of elytron sinuately emarginate with the outer angle angulate (fig. 1, c). Legs with short pale pubescence; anterior tibiae dilated towards apices; tarsi two-segmented, the basal segment very short. Venter convex, only six visible segments, the anal opening sub-dorsal (fig. 1, c).

Total length 0·88 mm., greatest width (across middle of elytra) 0·61 mm.

Habitat: Trinidad, Saugre Grande, Brigand Hill, 1 ♀ in litter, 5.i.1944 (*A. H. Strickland*).

Differs from *P. mirabilis* Reuter from Brazil in the much smaller eyes, less distinct and smaller punctures of elytra, less distinctly explanate costal margins of elytra, darker costal margins and in the pallid commissure and apices of the elytra. I have hesitated before establishing a new species for this Trinidad specimen, since I have been unable to refer to Reuter's description and figure. The above differences are based on the description and figure given by McAtee and Malloch in their 1925 revision of the family.

It appears fairly certain that the macropterous males taken by Strickland at the same place and at the same time belong to this species. Two similar males were taken at Marper, close by, on the following day and are undoubtedly conspecific with the first. I therefore propose to describe these males as those of **Ptenidiophyes trinitatis** sp. n.

Macropterous ♂:—

Colour: Similar to female but rather darker on the pronotum. Hemielytra dark brown with the apical half of the clavus and the base of the corium adjoining claval suture pale yellow, so that when the elytra are closed the pale yellow area forms a large triangular spot with its base extending across the elytra just below the apex of the scutellum; elytral membranes shading to a pallid yellowish-grey at apices.

Structure: Head and pronotum strongly deflexed (fig. 2, a); head similar to female but with the diameter of eyes distinctly larger (5 : 4) and with more facets; seen antero-dorsally, about three-quarters as long as wide across eyes (15 : 22), ocelli absent, relative lengths of antennal segments 4 : 5 : 12 : 17; rostrum long as in female, surface of head finely granulate with dispersed fine pubescence as in female; rather less convex and prominent in front of eyes than female. Pronotum less convex than in female, lateral margins convex, posterior margin sinuate, broadly convex in the middle and slightly concave

at each side, so that the posterior lateral angles are much less rounded than in females and angularly slightly prominent; anterior collar in middle one-fifth the length of posterior lobe (3 : 15); propleura swollen as in female. Scutellum relatively much longer than in female (8 : 13) with the apex distinctly narrowed and the disc at base concave. Hemielytra fully developed (fig. 2, b), extending well beyond apex of abdomen; venation obscure in reflected light but distinct seen from underside and in balsam preparations; there is a deep longitudinal crevice or fissure lying obliquely towards apex of corium along the inner margin of an elongate oval thickened area which incorporates two veins (fig. 2, b) and the area between them; towards the bottom of this crevice there is a row of ten pegs projecting

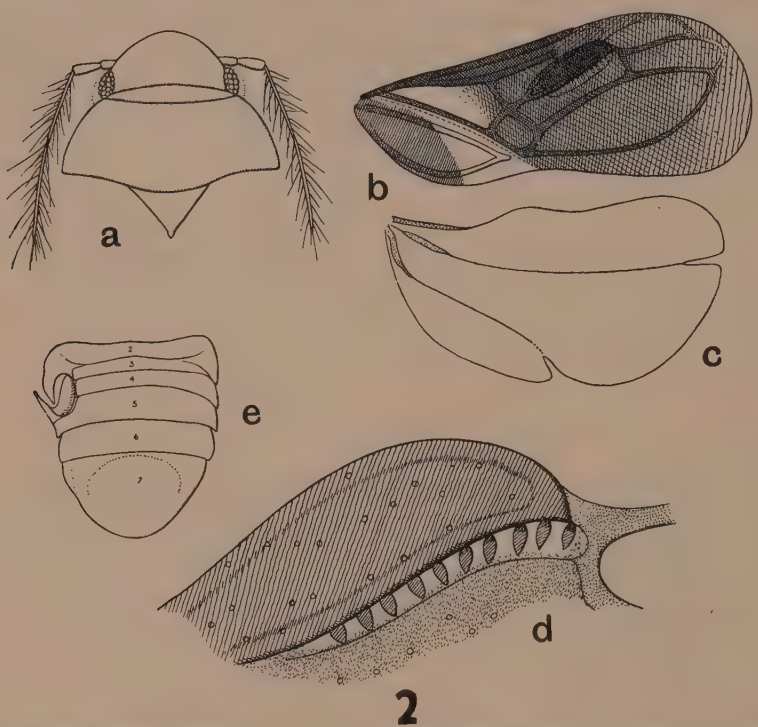


Fig. 2.—*Ptenidiophyes trinitatis* sp. n. ♂. a, dorsal view of head, pronotum and scutellum; b, hemielytron, showing position of stridulatory groove; c, hind-wing; d, stridulatory groove of hemielytron highly magnified, showing the ten pegs; e, ventral view of abdomen to show asymmetrical organ at the base of right-hand side.

from the costal side of the crevice and extending right across to the other side (fig. 2, d). This detail is seen only at high magnification. The function of this organ is doubtful but is possibly a stridulating organ. Corium finely granulate with some very minute whitish scale-like hairs difficult to distinguish, but without the puncturation found in the female; membrane opaque with a matt surface, not distinctly delineated from the corium. Legs as in female, the hind tibiae with a few short spine-like bristles. Abdomen with a curious structure at the base on the right-hand side extending from the third to the fifth ventral segments and consisting of a deep hollow, bounded internally by a concave oval plate which appears to be sutured off from the ventral sclerites (fig. 2, e); this hollow protected above by a posteriorly directed extension of the second (first visible) ventral segment, and below by a strong acute spur apparently part of the concave oval plate, since it is sutured off from the fifth ventral segment (fig. 2, e). The male genitalia are very difficult to make out.

The genital capsule (ninth segment) is inserted dorsally above the large flap-like seventh ventrite, and the eighth segment appears to be represented by a narrow dorsal ring which is divided into two by an oblique fracture; the anal tube is membranous; there are two asymmetrical parameres, the right-hand one (fig. 3, b) projecting laterally in the shape of a narrow riband-like process slightly dilated towards its apex, the left-hand one (fig. 3, a) thick and triangular in outline, the acute angle directed posteriorly; the aedeagus (fig. 3, c and d) is pear-shaped at base with a thin flange to direct the base of the filamentous penis, which is exceptionally long, forms eight coils and gradually tapers to the apex.

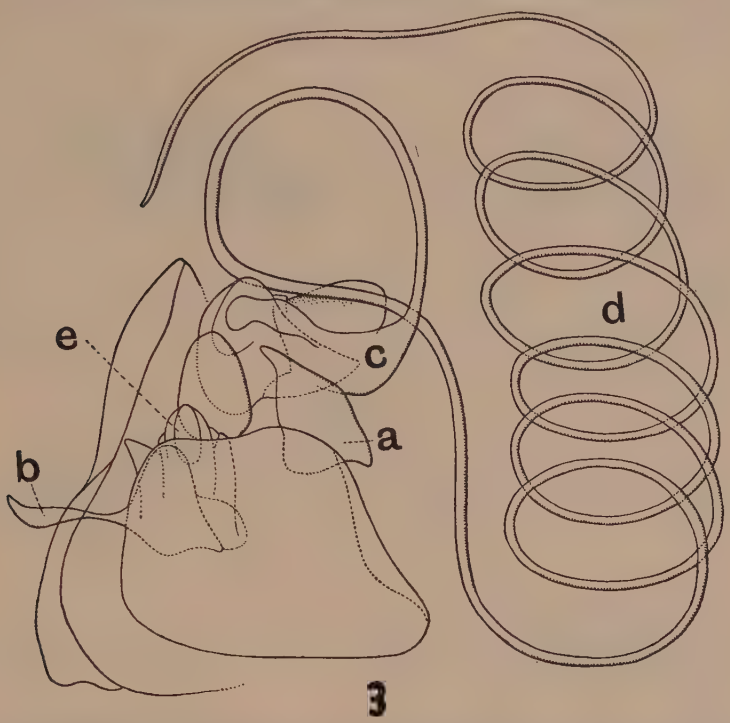


FIG. 3.—*Ptenidiophyes trinitatis* sp. n. ♂. Male genital segment drawn from balsam preparation (the segment has split open and the sternite and tergite are consequently distorted). a, left paramere; b, right paramere; c, aedeagus; d, long coiled vesica; e, anal segment (10th).

Total length (to tip of membrane) 1·0 mm.; breadth across humeral angles of pronotum 0·5 mm.

Habitat: Trinidad, Saugre Grande, Brigand Hill, 1 ♂ in litter, 5.i.1944. Saugre Grande: Marper, 2 ♂ in litter, 6.i.1944 (*A. H. Strickland*).

The most striking difference between the male and female, ignoring the expected difference due to the full development of the wings in the male, is the presence of puncturation on the female elytra which is entirely absent on those of the male. The venation of the elytron of this species is quite different from that of any other genus of CRYPTOSTEMMATIDAE figured by McAtee and Malloch. The function of the curious abdominal organ described above is difficult to conceive, unless the spur acts as a plectrum for the stridulatory groove on the elytron, although how this spur could be brought into contact with the groove is hard to imagine. In any case, it is on one side of the abdomen

only. It is possible that this abdominal organ has some connection with the very long filamentous penis, and more likely that the apical spine on the hind tibia is used as the plectrum for the stridulatory groove.

Schizoptera (Odontorhagus) stricklandi sp. n. (fig. 4, a–e).

Colour ♂: Dark chestnut brown, paler along basal margin of pronotum, on metapleura and on venter; rostrum, antennae and legs yellow, the first antennal segment pale brown, the apex of rostrum somewhat infuscate; membrane of elytron from second vein to hind margin shading to pale cream; extreme base of clavus yellowish-white, apical half of clavus dull yellowish, a dark blackish smudge over inner half of corium.

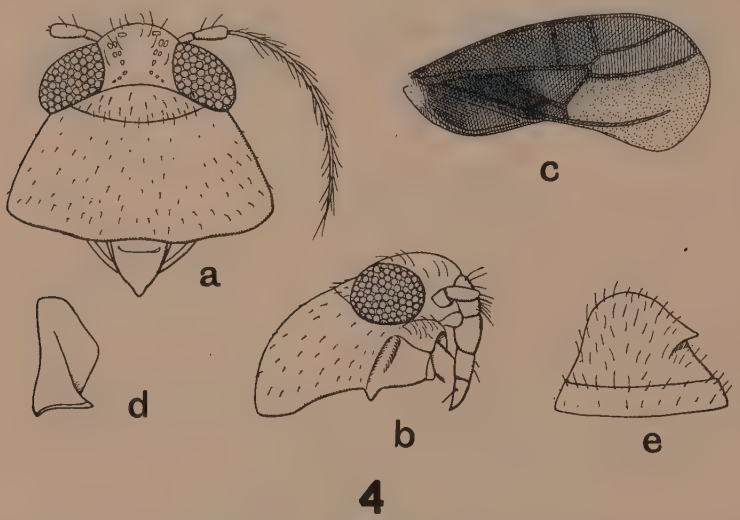


Fig. 4.—*Schizoptera* (*Odontorhagus*) *stricklandi* sp. n. ♂. a, dorsal view of head, pronotum and scutellum; b, lateral view of head and pronotum; c, hemielytron; d, metapleuron; e, fifth sternite of male.

Structure ♂: Head much broader across eyes than long in middle (30 : 11), extending well in front of eyes and broadly rounded in front; vertex between the eyes as wide as one eye (10 : 10); rostrum extending a little beyond posterior margin of prosternum; relative lengths of antennal segments approximately 4 : 5 : 22 : 20; ocelli absent, clypeus shining and distinctly prominent; vertex with dull matt surface but with a longitudinal row of smooth shining areas down each side of middle (fig. 4, a); vertex with a number of more or less regular semi-erect bristles, a number of shorter more depressed bristles on clypeus and a few on rostrum. Pronotum much wider than long in middle (44 : 26), strongly convex, especially antero-posteriorly, surface dull matt with short depressed pubescence longer on the collar; a distinct curved transverse impressed line near anterior margin delineating a broad (in middle) convex anterior collar narrowing towards each side (fig. 4, a); suture between propleuron and pronotum running more or less straight back to hind margin to just dorsad of the posterior angular projection of the propleuron (fig. 4, b); a broad shallow groove running along ventral side of the suture but not extending to the posterior margin; posterior margin of pronotum shallowly emarginate in middle, humeral angles rounded. Scutellum slightly shorter than wide at base (11 : 12), base transversely depressed, apex very slightly constricted and lobed, surface dull matt. Metapleuron without a cross ridge (fig. 4, d). Venation of elytron intermediate between *S. cubensis*

McAtee & Malloch and *S. plana* McAtee & Malloch as figured by McAtee and Malloch, the discoidal cell (middle subapical) triangular as in *S. plana*, but the subapical costal cell, above it, square as in *S. cubensis*; pubescence on veins very short and depressed, not long as in *S. cubensis*, no stridulatory organ present. No asymmetrical basal abdominal organ in male as found in *Ptenidiophyes trinitatis*; fifth abdominal sternite similar to that of *S. apicipunctata* McAtee & Malloch as figured by McAtee and Malloch (fig. 4, e). Total length (to apex of membrane) 1·4 mm.; breadth across humeral angles of pronotum 0·58 mm.

Habitat: Trinidad, St. Augustine, 3 ♂ in litter, November 1943–February 1944 (*A. H. Strickland*).

In colour of elytron resembling *S.* (*Odontorhagus*) *bipartita* McAtee & Malloch, but differs in hairs on pronotum being much shorter than second antennal segment, hairs on veins of corium much shorter than height of veins above the field of the elytron and in the shape of the fifth abdominal sternite of the male. Runs down to *S.* (*O.*) *decius* McAtee & Malloch in McAtee and Malloch's key but differs in colour of membrane and shape of fifth sternite. The latter in *S.* (*O.*) *stricklandi* strongly resembles that in *S.* (*Schizoptera*) *apicipunctata* McAtee & Malloch, but this species, of course, belongs to a distinct subgenus which lacks the spur on the posterior margin of the propleuron and has the suture between the pronotum and propleuron running obliquely from behind the lower margin of eye to the humeral angle.

Cryptostemma sordida sp. n. (fig. 5, a and b).

Colour ♂ and ♀: More or less uniformly pale brownish-yellow (ochreous) with a distinct whitish pubescence, underside, at least, somewhat paler.

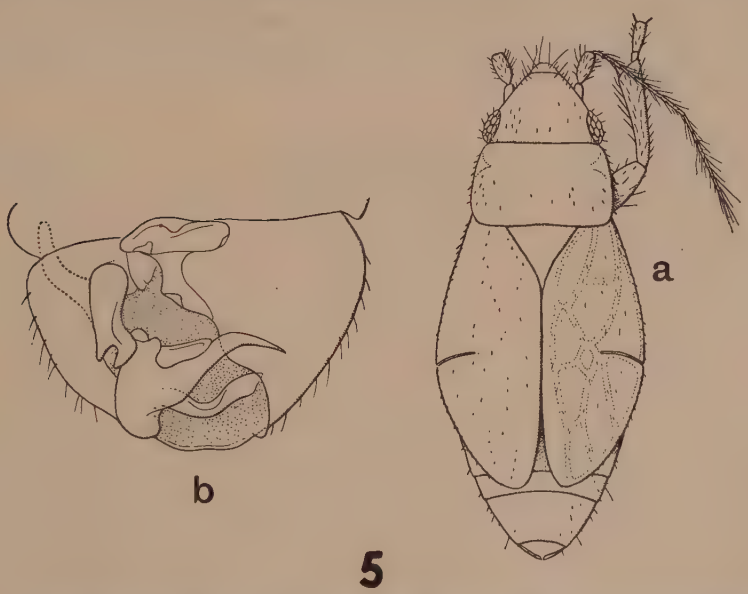


Fig. 5.—*Cryptostemma sordida* sp. n. a, dorsal view of ♀ showing on one hemielytron the obsolete venation which is only visible at high magnification with special lighting; b, dorsal view of male pygophor, showing asymmetrical parameres.

Structure ♂ and ♀ : Head about three-fourths as long as wide including eyes (15 : 19), vertex seven times as wide between eyes as width of one eye (14 : 2), eyes small, granulate, with several short hairs; ocelli absent; clypeus distinct with several rather long hairs, apex of frons at base or clypeus with several long hairs; relative lengths of antennal segments 3 : 4 : 18 : 14; rostrum short, extending slightly beyond apex of prosternum, basal segment very short, relative lengths of remaining three segments 5 : 6 : 4. Pronotum shorter than wide at base (13 : 20), almost rectangular, but the anterior margin slightly narrower than the posterior margin (17 : 20) and the angles rounded. Scutellum slightly shorter than wide at base (11 : 12). Hemielytra reduced, opaque, membranous, extending to base of sixth visible abdominal segment, venation obsolete, visible in certain lights at high magnification (fig. 5, a) and then similar to that of *C. uhleri* McAtee & Malloch as figured by McAtee and Malloch (fig. 9, *loc. cit.*); fracture at middle of costal margin extending midway across the elytron, clavus fused with corium, membrane not evident, hind-wings absent. Legs strongly pubescent, covered with bristly hairs, the anterior tibiae dilated towards apices, the anterior and middle tarsi with two segments, the posterior tarsi with three segments. Seventh abdominal segment in female twice as long as sixth, the seventh segment containing on left-hand side a small highly sclerotised spherical organ, ovipositor absent. Male genitalia figured (fig. 5, b), the parameres asymmetrical; male pygophor twisted so that opening is dorsal; aedeagus relatively simple without the long filamentous vesica found in *Ptenidiophyes trinitatis*; anterior margin of opening of pygophor with a complicated reflexed structure very difficult to make out owing to the minute size. Total length ♀ 1·04 mm.; ♂ 1·0 mm. Width across base of ♀ pronotum 0·28 mm.

Habitat : Trinidad, St. Augustine, Imperial College Meteorological Station. Several specimens of each sex, including type ♂, in the soil, 23.xi.1943–1.iii.1944 (*A. H. Strickland*). Possibly the brachypterous form of *C. uhleri* McAtee & Malloch since venation is similar to that of *uhleri*, but the second antennal segment is not twice as long as first, as described by McAtee and Malloch for the latter species.

A NOTE ON A THIRD SPECIMEN OF *ISOMMA HIEROGLYPHICUM* SELYS (ODONATA)

By Lt.-Col. F. C. Fraser, I.M.S. Retd., F.R.E.S.

Selys founded the genus *Isomma* on a single specimen of a single species in the year 1892. The type, a female, came from the Island of Nossi-Be, Madagascar, and is now in the Selysian collection at the Brussels Museum. In 1898 another specimen was secured, this being a male from the mainland of Madagascar. It was lent to Selys by René Martin, so should be in the Muséum national d'Histoire naturelle, Paris. Since then, this pair of insects has represented all we know of this rare dragonfly, so that the description of a third specimen, now in my own collection, will be of considerable interest. The two previous descriptions were both incomplete and, in some respects, incorrect due to the poor condition of the two specimens and the crushed state of the male anal appendages so that the exact shape and relationships of these latter could not be made out. The specimen before me, although not in first-class condition, has preserved its colour and markings almost perfectly and the anal appendages are in such good preservation that I have been able to make good camera lucida studies and to figure them as well as the wing venation for the first time.

The original pair differed in some venational details which were sufficiently important to create some little doubt as to the relationships existing between the two. However, in the specimen before me, there exists evidence which largely wipes out these differences, so that there is no longer any doubt that they represent the two sexes of one species. Selys tabulated the differences found between the female type and the male allotype, and this table is here reproduced with the addition of the characters of the new specimen contrasted :—

Female type	Male allotype	New specimen
Discoidal cell traversed in all wings.	Discoidal cell traversed in hind-wings alone.	Discoidal cell traversed in all wings save the left fore-wing.
Subtrigone traversed in fore-wings.	All subtrigones free.	All subtrigones free.
Three cubital veins in fore-wings, 2 in the hind-wings.	Two cubital veins in all wings.	Three cubital veins in left fore-wing, 2 in all the others.

It will be seen that the differences which existed between the first two are largely bridged in the last.

The fact that the discoidal cells and subtrigones were traversed and that the cubital veins were in excess in the type of *hieroglyphicum* led Selys to form the opinion that the genus *Isomma* was closely related to *Diastatomma* Burmeister, and he accordingly relegated it to the Legion Lindenia. Aided, however, by the new evidence afforded by the male, he revised his opinion in 1898 and transferred the genus to the Gomphinae, where it undoubtedly belongs. A revised definition of the genus together with a full description of the species now follows :—

Genus *Isomma* Selys.

Isomma Selys, 1892, *Ann. Soc. ent. Belg.* **36** : 104 (descr. genus).
1898, *Ann. Soc. ent. Belg.* **42** : 332 (revision).

Dragonflies of rather large size and robust build belonging to the subfamily GOMPHINAE, coloured black marked with yellow and ferruginous. Wings long and narrow, apices of fore-wings rather obtuse and rounded, those of the hind-wings more pointed and slightly falcate, the difference being due to the presence of 3 rows of cells between Rii and IRii in the fore-wings against only 2 rows in the hind-wings. Pterostigma moderately long and narrow, strongly braced; venation close, black save for the costa, which is finely yellow to slightly distal of the nodus; primary antenodals the 1st and 5th; arculus at the level of the 2nd antenodal, its sectors closely parallel but distinctly separated right up to their

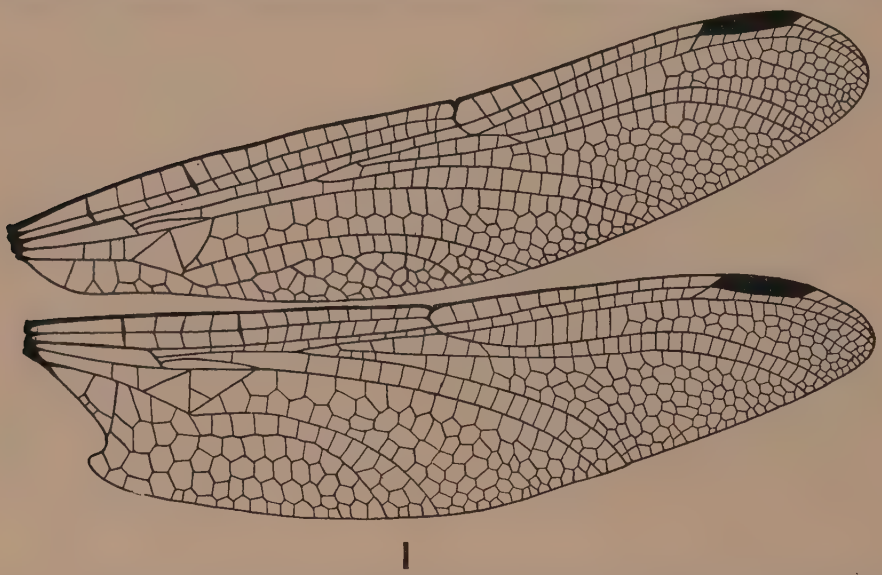


FIG. 1.—Wings of *Isomma hieroglyphicum* Selys, ♂, to show venation. (Epidiascopic sketch from the new male specimen. Original.)

origins; the superior sector symmetrically forked and only 2 cross veins running between the two sectors in fore-wings, 1 in the hind-wings; discoidal cells rarely entire, usually traversed by a vein at the posterior angle running between the distal and basal sides; discoidal cell of hind-wing considerably elongated in the length of the wing and with its distal side nearly twice the length of the basal; 2 rows of cells in discoidal field of fore-wing nearly to level of nodus; 2 to 3 cubital veins in fore-wings, only 2 in the hind-wings; 2 rows of cells in anal field of fore-wings, 4 in the hind-wings; anal-loop obsolete; anal triangle normally 4-celled; tornal angle prolonged and the base deeply excavate as in *Gomphidia* Selys; anal vein of fore-wings markedly pectinate; CuP and Anal vein diverging at wing border in hind-wing. Legs short and robust. Anal superior appendages forcipate. Penis highly specialised but with Onychogomphine characters.

Genotype *Isomma hieroglyphicum* Selys.

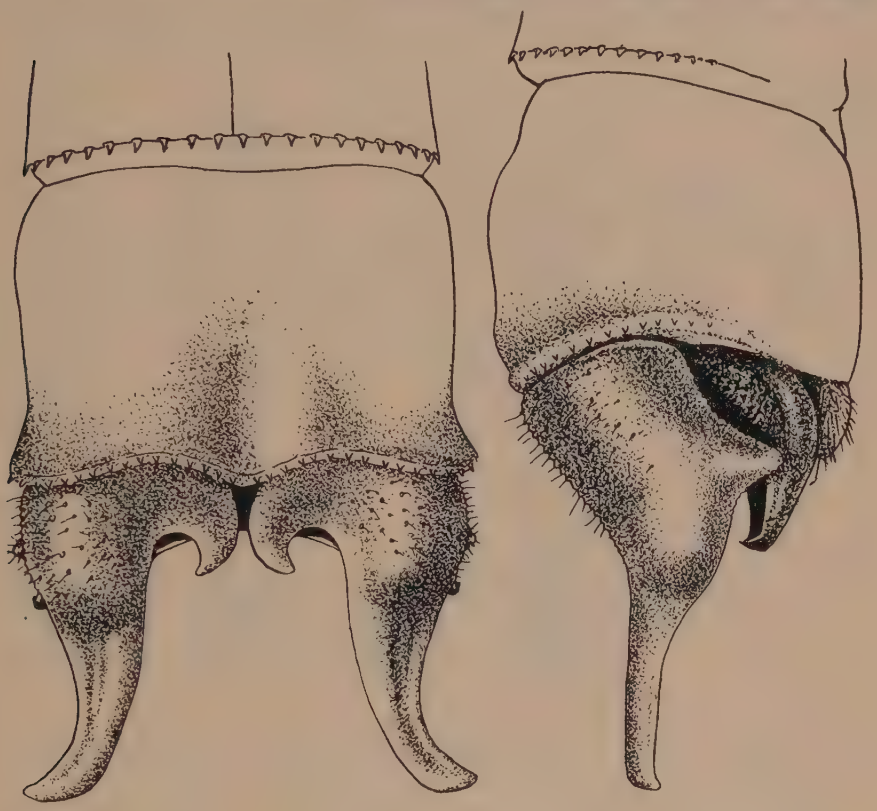
Isomma hieroglyphicum Selys.

Isomma hieroglyphicum Selys, 1892, *Ann. Soc. ent. Belg.* **36** : 105 (descr., ♀ from Nossi-Be).
Selys, 1898, *Ann. Soc. ent. Belg.* **42** : 334 (descr., ♂ from Madagascar).

[Description of the new male.]

Abdomen 47 mm. Hind-wing 35 mm. Pterostigma 4·0 mm.

Head : labium ochreous, labrum black at base, this colour extending as a rounded projection medially and bordered by a half-circle of bright yellow; the whole anterior border of labium narrowly reddish-brown (resembles the type female but not the male); anteclypeus bright ochreous, postclypeus black with a large oval citron yellow spot on each side against the eyes; frons pale greenish-yellow above and along crest, narrowly black bordering the postclypeus and along the base above, a narrow black line in the median sulcus connecting the two dark areas. Rest of head, including behind the eyes, black; occiput simple,



2

Fig. 2.—Anal appendages of the same species, ♂, dorsal and left lateral views. (Camera lucida studies. Original.)

nearly straight, fringed with long black hairs. Prothorax black, the anterior lobe, a medial oval spot on the posterior lobe confluent with a similar spot on the middorsum of middle lobe and a small round spot to the outer side and front of the latter all citron yellow. Thorax black on dorsum, bright ochreous (or citron yellow in life) on the sides and beneath. Dorsum marked with bright ochreous as follows : a mesothoracic collar slightly interrupted in the middle, an oval antehumeral stripe broadly separated from the mesothoracic collar below and antealar sinus above, ending obtusely above, broadening downwards and then tapering to a sharp point. Lastly a broadly interrupted humeral stripe made up of a broad triangular upper spot with its long axis horizontal and a narrow stripe on the lower

half of dorsum, both spots anterior to the humeral suture. Laterally the black encroaches anteriorly on the yellow ground colour, and there are two large roughly triangular black spots, the anterior the smaller, situated on the upper parts of the two lateral sutures. The posterior spot sends a quadrate extension posteriorwards on to the metepimeron. Both spots are narrowly connected above to each other and to the black on dorsum; alar sinus black. Legs black, short and very robust; anterior femora bright citron yellow on the inner side; mid femora with distal half of inner side of the same colour; both femora clothed with a dense field of very short, very small spines (posterior legs missing but most certainly unmarked with yellow). Wings hyaline; pterostigma black, covering 5 to 6 cells; nodal index $\frac{12-17}{12-13}\Big|\frac{18-12}{14-12}$; 2 cubital cross veins in the right fore-wing and both hind-wings, 3 in the left fore-wing; discoidal cells traversed in right fore-wing and both hind-wings, entire in the left fore-wing; all hypertrigones and subtrigones entire; anal triangle

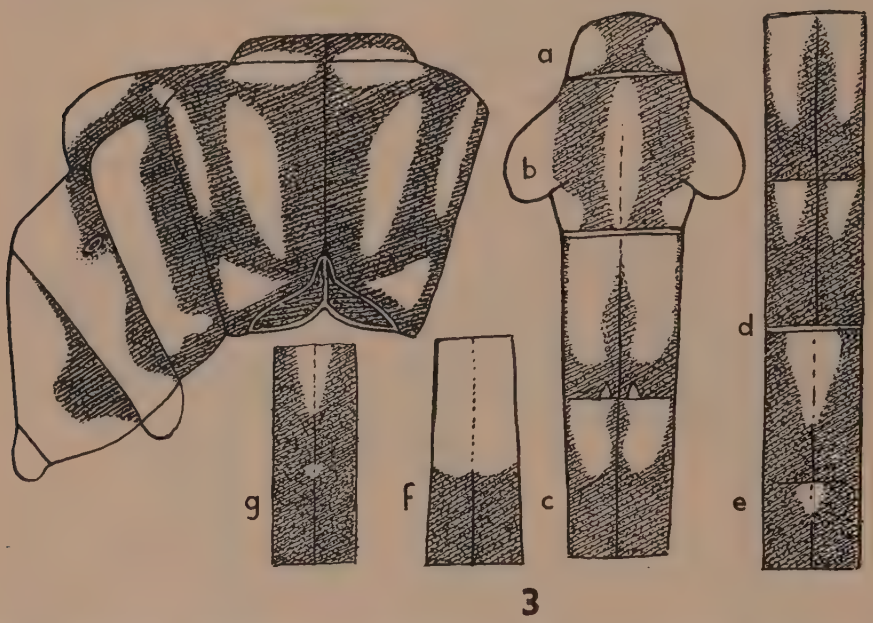


Fig. 3.—Markings of thorax and abdominal segments, the latter numbered; diagrammatic.

4-celled but in the left hind-wing the small central basal cell is duplicated. Abdomen blackish-brown, changing to dark ferruginous on segments 8 to 10, which latter are unmarked save for two dark ill-defined dorsal apical triangles on segment 8 extending for about one-third the length of segment. Segment 1 with a large yellow triangular spot on each side, segment 2 with a broad yellow lateral stripe, which includes the oreillets on each side; a middorsal longitudinal somewhat fusiform stripe extending the whole length of segment. Segments 3 and 4 with a pair of dorsal basal elongate bright yellow stripes, the apical ends of which curl in to enclose partially an area of the dark ground colour extending about one-third the length of segment 3 and rather less than that on 4; a second pair of spots elongately triangular in shape and with bases on the jugal suture. Segments 5 and 6 with a basal dorsal elongate triangular yellow spot and a second medial dorsal triangular spot of very much smaller size at the jugal suture (on segment 6 this latter spot is almost obsolete); segment 7 with slightly more than its basal half wholly bright yellow. Anal appendages: superiors yellow apically, black for about the basal half,

which is greatly swollen; the apical half depressed and tapered to a fine point, curling at first inwards and then strongly outwards and a little upwards, its inner border thickened, its outer with knife-like edge. On the inner side of base a very robust depressed strongly curled spine directed slightly backwards, the right side spine tending to overlap the left when the appendages are adducted; on the outer side and ventral aspect a short stout mammillated spine. Inferior appendage broad and shallow, its branches widely divaricate, its apices peeping out from beneath the superior appendages as viewed from the dorsum and with a short upturned robust spine at the apex. (Selys described the superior appendages as having 2 spines on the outer side but actually there is only the one, so that I am led to think that he mistook the apex of the inferior appendage for the second spine, the two appendages, of the allotype, being crushed together. He stated: " le mâle . . . a sans doute subi une pression lorsque le chasseur l'a mis en papillote, de sorte que ses appendices anals supérieurs et inférieurs ont été en quelque sorte enchevêtrés l'un et l'autre et que leur veritable position naturelle est difficile à apprécier.") Genitalia in a bad state and disrupted when the penis was removed (for description of this latter, see Fraser, 1940, *Trans. R. ent. Soc. Lond.* **90** : 547, pl. 5, fig. 9).

Habitat: MADAGASCAR: Tamatave, 1 ♂ without further data. Will be presented to the British Museum (Natural History). The symmetrical bifurcation of the superior sector, of the arculus, and the presence of only 1 or 2 cross veins between the sectors proximal to the bifurcation of the superior sector, place this genus in the subfamily GOMPHINAE as opposed to the EPIGOMPHINAE, in which the opposite pertains.

ERRATA.

p. 110, line 23, for " Van der Goot (1916) " read " Van der Goot (1915) ".

p. 112, explanation to fig. 1, line 1 and line 3, " siphuncula " should read " siphunculus ".

p. 117, line 6 from bottom, for " C. G. Druce " read " G. C. Druce ".

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